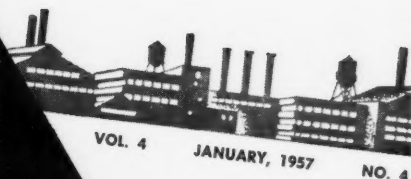
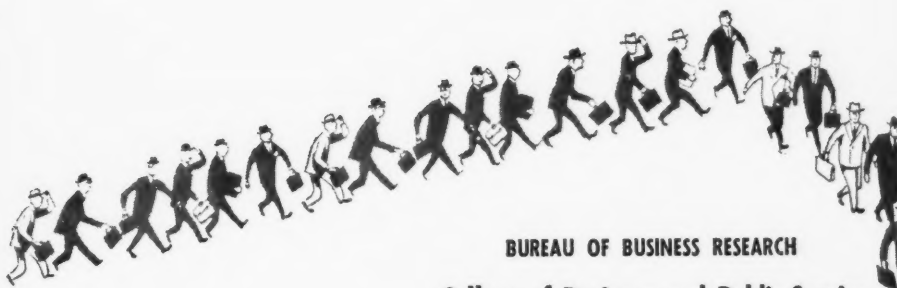


business topics



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Vol. 4 January, 1957 No. 4

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Business Topics is published bi-monthly by the Bureau of Business Research of the College of Business and Public Service of Michigan State University, East Lansing, Michigan. Opinions expressed in articles are those of the writers, and do not necessarily represent the editorial point of view.

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Published as a service of Michigan State University of Agriculture and Applied Science for all those interested in business and economic matters. Entered as second-class matter at the Post Office at East Lansing, Michigan, on June 10, 1953, under the authority of the Act of August 24, 1912, as amended by the Act of August 4, 1947.

STATE OF THE ECONOMY

By MARVIN HOFFMAN*

Once again it is timely to review current economic trends and to assess their portent.

Once again our economy demonstrated many of its remarkable qualities during the year of 1956. Despite cut-backs in some segments of our economy and uncertainties in other areas, some other major segment seemed to step forward and helped bring about a record year, one with a Gross National Product of an estimated \$412 billion. The automobile industry faced a major readjustment during the year forcing substantial productions declines in early Summer; the steel industry experienced a five-week strike and has been forced to work at full capacity to try to keep up with the demand for steel; home construction has been undergoing a gradual decline ever since the middle of 1955 while total construction activity in 1956 continued to establish new record highs; employment reached all-time highs during the year. Retail sales for the year also reached record proportions despite lulls occasioned by unseasonable weather, the steel strike, and an early Thanksgiving.

One of the major stimuli for continued economic growth has been the investment in capital goods. Expenditures for new plant and equipment were at an all-time high during 1956 of nearly \$35 billion. The need for financing these capital improvements and the heavy demand for funds from all sectors of the economy have created one of the serious problems of the moment—a shortage of funds. The natural operation of supply and demand in the money market and certain

restrictive policies of the Federal Reserve Board have caused interest rates to reach the highest levels in 25 years; yet in spite of higher interest rates, lenders have been forced to become necessarily selective in their operations. Problems of the shortage of funds are being felt in many different ways so that the related questions of inflation, continued economic expansion, and a prolongation of the current prosperity become the focal points of the economic picture at the outset of 1957.

Yet in spite of current problems, the economic picture at the present time is very good—just as it was at this time a year ago, although many rough spots have occurred in the interim. This is not meant to imply that there is a lack of problem areas at the present time.

United States

Gross National Product. The Gross National Product (the value of all goods and services produced in the United States), after a slight drop in 1953, has shown a continual upswing from that date to the present. Whereas the GNP was \$360.7 billion for 1954, it shot up to \$390.0 billion for 1955 and continued to increase steadily during 1956. During 1956, the GNP for the first three quarters of the year (at annual rates) was \$403.4 billion, \$408.3 billion, and \$413.8 billion. Although the fourth quarter figures are not yet available, it is generally expected that the increase during the fourth quarter will be sufficient to yield a GNP of about \$412 billion for the year. Such a figure is an all-time record

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high, although it should be noted that, perhaps, a half of the 1956 increase was due to higher prices.

Personal income continued to rise each month of the year, except for July (during the steel strike). By October, total personal income was at a seasonally adjusted annual rate of \$332.6 billion. For the first 10 months of the year, personal income was at an annual rate of \$323.6 billion, compared to the \$303.7 billion in the similar period of 1955.

Industrial Production. The seasonally adjusted Federal Reserve Index of Industrial Production began the year with the index undergoing a gradual levelling off from the 144 percent of the 1947-49 average that was reached in December 1955. This gradual decline, or "rolling readjustment," took place during much of the first half of 1956, and was brought about largely in the durable manufactures area and in the automotive field in particular, although the index did not drop below 141 in the first half. A progressive adjustment in automotive production schedules occurred during much of this period. The 34 day steel strike caused the July index to plunge to the year's low of 136, the lowest figure reached since April 1955. Following the strike, the index rose rapidly, setting successive records in September, October, and November. The December index figure of 147, an all-time high, was 3 points above the figure for the preceding year. All major phases of the index showed general improvement following the mid-year lows, but the most impressive gains were in the durable manufactures sector where the index rose from a July low of 148 to the December high of 166 percent of the 1947-49 level. Non-durable manufactures remained remarkably steady

during most of the year, although a slight reduction took place in mid-year; however, by December, this index stood at a record high of 131 percent.

Steel production during the first half of the year generally was running at, or near, capacity rates. Increasing demands for steel products and a certain amount of inventory accumulation in anticipation of wage negotiations caused heavy steel production during the first half of 1956. Growing demand caused by new plant and equipment needs, shipbuilding, and general construction, coupled with the urgency of catching up with lost production, has caused steel operations in the last quarter of the year to be at rates slightly above rated capacity. Despite herculean efforts, steel production during 1956 probably ran just under the 117.0 million short tons recorded in 1955. The industry, whose capacity stood at 128.4 million tons at the outset of 1956, has scheduled capacity increases of another 15 million tons by 1959 to keep pace with growing demands. The question of continued expansion in steel capacity is causing current concern and reappraisal because of the recent refusal by the Office of Defense Mobilization to grant to the steel producers the advantages of rapid amortization for their planned expansion.

Construction. The construction boom, one of the principal supports of 1955's remarkable economic record, continued to set records during 1956, although private residential construction has been a notable exception. Home construction activity has declined rather steadily since June 1955. Housing starts in 1955 totaled more than 1.3 million units while in 1956 starts dropped to about 1.1 million

units. In part, the decline in housing starts has been a result of the general tight money conditions which have dried up the sources of low-cost mortgage money. The decrease in the number of VA appraisal requests and FHA applications indicates that most of the decline in housing construction activity took place in government insured mortgages. The FHA has already taken steps to raise the interest rate of its insured loans while the VA is currently allowing contracts to be drawn up to allow for anticipated increases in the mortgage rate; however, these moves are generally viewed as being quite mild and not particularly effective in encouraging government insured mortgage loans.

Business and government spending on non-residential construction has been at record levels again for 1956. Private non-residential construction totaled about \$15.5 billion during the year compared to \$14.0 billion in 1955. Government construction in 1956 reached \$13.4 billion compared to \$12.4 billion recorded in 1955. Business and government construction should continue to rise during 1957—about 8 percent according to the U. S. Departments of Labor and Commerce joint annual forecast. A possible continued decline in home building, shortages of structural steel, the money problem, and higher costs are the only flaws in the otherwise rosy outlook for the construction industry for 1957.

Employment and Unemployment. Total civilian employment during 1956 broke the previous average high of 63,193,000 set in 1955 and probably will reach more than 65,000,000 for the year. An all-time record employment figure of 66,752,000 was set during August. The usual seasonal declines took place in employment

following August, but year-end employment was running ahead of the previously established records of late 1955. Unemployment averaged about 2,500,000 for the year, which was just under the average for 1955. At year's end, unemployment was just about the same as for 1955; November 1956 unemployment at 2,463,000 was just slightly above that of a year ago, although the unemployment rate of 3.6 percent was the same for both years.

Retail Trade. Consumer spending in 1956 once again set new records, although some of the increased volume was due to higher prices. Total retail sales for the year were estimated at more than \$196 billion. Department store sales for 1956 average 4 percent over the previous record set in 1955. All of this does not imply that the picture was uniformly good throughout the year, throughout all areas, and for all types of goods. Unseasonably warm weather in the Fall months seriously affected department store and apparel sales; a mid-week Christmas following an early Thanksgiving gave many retailers a sharp scare; and automobile dealers had a worrisome year. In spite of these difficulties, the overall picture was a good one.

Consumer credit continued to increase during the year, but at a much less rapid rate than in 1955. Total consumer credit outstanding, as an estimated \$40,631 million at the beginning of December, increased \$3,517 million during the year to date. The amount of increase in installment credit in 1956 has been considerably below the \$5,452 million spurt shown in 1955, indicating that consumers have been concentrating on re-payments rather than making new long-term commitments, and leading many observers to look forward to

another spurt in installment buying during 1957.

Prices. Both at the wholesale and retail level, prices have been generally moving upward during 1956. The Bureau of Labor Statistics' Consumer Price Index, after experiencing 3 years of relative stability, edged upward steadily during the year, except for a small drop during August. By November, the Index stood at 117.8 percent of the 1947-49 average, and this level was 3.2 percent above the year's low in January and February. All major segments of the index advanced during the year, although food and apparel did not advance as much as other sectors such as transportation and medical care.

The Wholesale Price Index of the Bureau of Labor Statistics began a slight rise in 1955 and continued the upward trend during 1956. From the low of 109.9 percent of the 1947-49 average in May 1955, the index increased almost steadily until the new record high of 115.9 percent was reached in November 1956. Price increases on the wholesale level during the year have been quite generally the case. Even farm prices, sliding downward since 1951, showed a distinct reversal during the year. From the December 1955 low of 82.9 percent of the 1947-49 average, the farm products sector stood at 87.9 percent during November 1956. Commodities other than farm products and foods continued, however, to dominate the upward movement of the Wholesale Price Index. This sector index stood at 115.2 percent of the 1947-49 average in January 1955, reached 120.4 percent in January 1956, and reached 124.2 percent in November 1956. In the two year period, there were only three mi-

nor set-backs to the upward movement of this sector index.

Agriculture. Total farm production during 1956 equalled the record total production figures of 1948 with heavy output of both crops and livestock products. The U. S. Department of Agriculture reported a record-equalling crop in 1956 despite the smallest harvested acreage in 20 years, a growing season plagued by late cold spring weather, and drought conditions throughout a large portion of the nation. The total planted acreage of 346 million acres was about 2 percent less than 1955, largely as a result of government acreage controls.

Farm prices during the year increased steadily until mid-year following the low reached during December of 1955 when the Index of Prices Received by Farmers dropped to 222 percent of the 1910-14 average. This index rose to 247 percent by June, but dropped back to 234 percent in October and November under the impact of record production. Prices received by farmers still ranged about an actual 5 percent above the December 1955 low. Unfortunately, prices paid by farmers rose during the year. The Parity Index (of prices paid by farmers) stood at 278 percent of the 1910-14 average in December 1955 and reached 289 percent in November. The vital resulting Parity Ratio was at a low of 80 percent in November and December of 1955. It rose hopefully to 86 percent in June, but slipped toward year's end to 81 percent in November because of the slight downward trend of farm prices in the last half of the year and the upward trend of prices paid by farmers.

Farmer's cash receipts from marketing during the first 11 months of 1956

were \$27.3 billion, 3 percent above the corresponding period of 1955. Although farm prices generally averaged slightly less in 1956 than in 1955, the volume of marketing was larger. In addition, government payments to farmers in the 11 month period were about \$0.5 billion. Total farm income in 1956 exhibited the first upswing since 1951 and should increase further in 1957 as a result of the soil bank program and increased demand for agricultural products from an increased U. S. population and increased export program.

Michigan

The year of 1956 was generally a good year for Michigan, although it did not quite measure up to the fantastic proportions of 1955 in all respects. Readjustment in the automotive industry was the rule and was a necessary evil whose consequences were widespread during the year. Despite these readjustments, 1956 still presents a good record.

Automotive Production. Automobile production faced serious problems in 1956 following the 1955 record of 7,920,000 car assemblies and 7,180,000 deliveries. For 1956, car assemblies were at an indicated 6,000,000 and deliveries at about 5,800,000 level. Such a 25 percent production cut-back is a serious problem to any industry. The need for adjustment became increasingly acute when dealer inventories of new cars reached an unprecedented 904,000 units on the first of March. Production cut-backs and vigorous selling activity succeeded in bringing the inventory figure to a low of 278,000 cars by the first of November when new models were beginning to appear.

Production cut-backs began to take place in late Spring and became pro-

gressively more severe as the year progressed; however, the production of 6 million cars during 1956 was still good enough to make it the industry's fourth biggest year. Less severe was the drop in truck production, which dropped from about 1,280,000 trucks in 1955 to an indicated 1,200,000 for 1956.

The industry began the new model year with good prospects as consumers were enthusiastically greeting the new cars. Auto production figures during December were running at weekly rates comparable to 1955, although shortages on the part of parts suppliers held November production down to about 593,500 cars, compared to the November 1955 output of 749,003 cars. During the first two months of the new model year, deliveries from the factories were generally below demand and customers were forced to wait for desired models.

The industry entered the 1957 model year with expectations for production and sales that could make the year second only to 1955. The generally orderly clean-up of 1956 models and the reception of the extensively redesigned models gave dealers cause for an optimistic outlook. Indications for the 1957 model year are that it will be a good year—but more closely tuned to market conditions than was the case in 1955.

Employment and Unemployment. The picture for employment and unemployment has been a reflection of the automotive situation to a considerable degree, although the State's non-agricultural employment as of November 15 stood at the highest level in Michigan's history. Non-manufacturing employment was generally upward during the year, but was not sufficient to offset the reduced levels of automotive pro-

duction that reached a low point by September. State-wide unemployment reached its worst point during September when an estimated 259,000 people, or 8.8 percent of the State's labor force, were unemployed. The worst of the situation in September was felt in Detroit where unemployment stood at 11.2 percent, Flint at 11.7 percent, and Saginaw with 10.5 percent. The situation definitely improved in the last quarter of the year with the introduction of the new automobile models. By December, unemployment was expected to drop to about 140,000 with increased manufacturing employment and increased seasonal hiring by retail stores.

Total employment in the State was downward throughout most of the year until during the last quarter of the year. Although non-farm employment had reached a total of 2,665,000 by mid-December, it was still 2.1 percent below the level of the previous year. The November wage and salaried employment of 2,366,000 represented the first upturn since December 1955.

Retail Trade. Retail trade throughout Michigan for most of the year has been good, although somewhat variable. Judging from sales tax collections of the Michigan Department of Revenue for 1956, only 4 months of 1956 exceeded comparable figures for 1955. Sales tax collections based on November business indicated that November was the first month since June where 1956 rose above 1955 monthly collections. The automotive group was generally the most severely depressed portion of the retail trade structure. December sales are expected to be comparable to the record level of business experienced in December 1955.

Department store sales state-wide ran 3 percent above 1955 for the year, although the picture was not uniformly clear for all major centers of the State, nor was 1956 always better than 1955. Scattered softness appeared in department store sales at various times because of weather and seasonal factors. Kalamazoo and Port Huron sales ran substantially above 1955 while Flint was the only major center whose department store sales were considerably below 1955 for the year.

Banking Activity. Bank debits (checks against depositors' demand accounts) provide a sensitive indicator of the pulse of business activity. Debits in the first quarter of the year were generally above 1955 levels in practically all centers of the State. It was in the second quarter of the year that 1956 decreases began to appear. Reduction in business activity was especially prevalent in areas where automotive production played such a dominant role in the local picture, with Flint again being the area most depressed. A general improvement took place during the last quarter of the year, consistent with the general upturn indicated by other measures. By November, only Flint was seriously below 1955 figures.

Bank deposits and loans of Michigan banks that are members of the Federal Reserve System generally were above 1956 levels, until late Summer. Demand deposits, particularly in the Detroit banks, began to slip below 1955 in the Summer months. By the end of November, loans and discounts of Lower Peninsula Federal Reserve members stood at \$2,825 million, up 10.1 percent over the figure of the preceding year. These same banks had demand deposits of \$4,031 million, down 1.5 percent from 1955, with Detroit banks

accounting for the drop, and time deposits of \$2,639 million, up 5.4 percent over 1955.

Other Factors. During 1956, Michigan began "the greatest era of road-building in the history of the State," according to the Highway Commissioner's report for 1956. During the past year, road and bridge contracts totaling \$169,000,000 were let by the State Highway Department, including engineering and right-of-way costs. The 1956 program is more than double the amount let in 1955 and equal to all trunkline construction placed under contract in the previous four years, 1951-1954, inclusive. And the department plans to let \$190,000,000 worth of road and bridge jobs during 1957!

The Outlook for 1957

The outlook for continued prosperity is fairly certain for the first half of 1957, although the economy is currently beset by many pressing problems that will require constant attention. Probably the number one problem is that of containing the inflationary trend in evidence during the past year. An economy operating at, or near, full employment, as is our situation, is in constant danger of a runaway inflation. This fact is well recognized by economists and responsible governmental authorities alike. One facet of the problem is that of meeting the ever-growing needs for funds from governmental, business, and private groups. The solution to this shortage, which can be met by encouraging additional savings, plowing-back of business earnings, or an expansion of our money supply, has become one of rationing prosperity — preventing further inflation and, simultaneously, not precipitating a recession. The various Federal agencies have not been unmindful of their responsibilities

in this connection and of the dangers involved.

For the year ahead, certain trends are evident. Prices will continue the upward trend of 1956, although there will be no runaway inflation. Wages will rise as a result of many recently negotiated labor contracts containing clauses allowing for automatic yearly increases or cost-of-living adjustments. Consumer spending should continue at high levels. Government spending will also increase, although another Federal surplus is in sight because of increasing income; taxes will probably remain at current levels. Consumer credit may also be due for another surge upward. The automotive scene should be better than in 1956 and will be in close adjustment with the market situation. Farm income should be higher as farmers will benefit more fully from the soil bank program.

The tight credit picture and growing shortages of labor and materials have resulted in a serious re-evaluation of many business expansion plans. Business expansion plans, however, are already scheduled at a rate of about \$38 billion for the first quarter of 1957, but the outlook is for some readjustment in the latter part of the year. It is not difficult to visualize the dilemma facing business leaders today—whether to continue their expansion programs and face a short-run overexpansion or not to expand and risk falling behind in the competitive struggle. This dilemma will become more acute with passing time, considering our steadily growing population underscored by the record number of 4.2 million births in 1956.

The outlook for 1957 is much like that in January 1956 — although some of the problems are different — reason-

able optimism during the first half of the year, followed by growing uncertainties in the latter part of the year. The solutions reached for many of the problems, noted earlier, will have a definite bearing on the last half of

1957, as will international tensions. Yet the long-range outlook based on a continued population growth, improved standard of living and technological advancements provides the potential for the greatest boom in our history.

Bank Debits

| City | Bank Debits (Thousands of \$'s) | | | Percent Change from Previous Year | | |
|------------------|------------------------------------|-----------|-----------|--------------------------------------|----------|----------|
| | Sept. '56 | Oct. '56 | Nov. '56 | Sept. '56 | Oct. '56 | Nov. '56 |
| Adrian | 23,894 | 26,886 | 26,688 | + 5.7 | +14.8 | +13.4 |
| Battle Creek | 69,062 | 72,244 | 70,822 | - 3.6 | + 2.8 | + 3.3 |
| Bay City | 52,515 | 56,625 | 54,938 | - 0.2 | + 8.3 | +10.6 |
| Detroit | 5,390,532 | 6,281,949 | 6,509,533 | - 8.7 | + 0.7 | - 0.9 |
| Flint | 151,192 | 164,618 | 161,600 | -15.5 | - 7.2 | - 8.5 |
| Grand Rapids | 310,632 | 353,071 | 330,853 | - 2.3 | +12.8 | + 5.7 |
| Jackson | 83,274 | 97,627 | 95,822 | -10.3 | + 6.4 | + 4.0 |
| Kalamazoo | 141,403 | 167,674 | 146,084 | +12.9 | +26.8 | +10.8 |
| Lansing | 141,328 | 152,350 | 155,370 | - 9.7 | + 4.1 | + 5.1 |
| Muskegon | 83,592 | 86,689 | 86,852 | + 2.8 | + 6.4 | +13.7 |
| Pontiac | 79,500 | 88,568 | 87,445 | - 8.3 | + 8.0 | + 9.2 |
| Port Huron | 40,067 | 41,047 | 41,343 | - 2.2 | + 0.7 | + 4.5 |
| Saginaw | 119,858 | 132,591 | 125,448 | + 3.2 | +12.2 | + 4.0 |
| Escanaba | 11,022 | 13,028 | 11,742 | - 3.1 | +21.2 | +16.0 |
| Marquette | 13,780 | 15,261 | 14,312 | +13.9 | +19.1 | +23.4 |
| Sault Ste. Marie | 10,396 | 12,287 | 10,137 | - 8.4 | +16.9 | - 3.6 |

Sources: Federal Reserve Banks of Chicago and Minneapolis and Board of Governors of the Federal Reserve System

Department Store Sales

| City | September '56 | | October '56 ¹ | | November '56 | | Percent change 1956 vs. 1955 Jan.-Nov. |
|---------------|---------------------------------|------------------|--------------------------|----------|--------------|----------|--|
| | Percent Change from Aug. '56 | Sept. '55 | Sept. '56 | Oct. '55 | Oct. '56 | Nov. '55 | |
| Battle Creek | + 2 | + 2 | - 3 | - 2 | +18 | +11 | + 6 |
| *Detroit | + 8 | + 4 | 0 | 0 | +27 | + 8 | + 4 |
| *Flint | - 2 | -12 | 0 | -14 | +18 | - 8 | -11 |
| *Grand Rapids | + 2 | - 5 | - 4 | - 6 | +23 | - 4 | - 2 |
| *Jackson | + 1 | + 7 | - 1 | + 1 | +21 | + 8 | + 9 |
| *Kalamazoo | - 5 | +16 | + 2 | + 8 | +30 | +10 | +14 |
| *Lansing | +20 ² | - 3 ² | -18 | -11 | +30 | + 1 | - 2 |
| *Muskegon | + 2 | + 4 | - 5 | - 2 | +12 | +10 | + 6 |
| Port Huron | +16 | +14 | -12 | + 9 | +31 | +13 | +12 |
| *Saginaw | - 6 | 0 | + 1 | - 5 | +20 | + 3 | + 1 |

*Metropolitan Areas. ¹October 1956 had one more trading day than October 1955. ²Revision.

Source: Federal Reserve Bank of Chicago.

Motor Vehicle

Factory Sales

From Plants in U.S.

| | Factory Sales | | | Percent Change from Previous Year | | |
|------------------------|---------------|----------|----------|-----------------------------------|----------|----------|
| | Sept. '56 | Oct. '56 | Nov. '56 | Sept. '56 | Oct. '56 | Nov. '56 |
| Passenger Cars | 203,888 | 352,140 | 576,708 | -56.4 | -30.3 | -22.7 |
| Motor Trucks and Buses | 71,667 | 92,982 | 114,855 | -22.2 | - 3.2 | -21.2 |

Source: Automobile Manufacturers Association

Electric Sales in

Kilowatt Hours

| | Thousands of KWH Sales | | | Percent Change from Previous Year | | |
|-------------|------------------------|-----------|----------|-----------------------------------|-----------|----------|
| | Aug. '56 | Sept. '56 | Oct. '56 | Aug. '56 | Sept. '56 | Oct. '56 |
| Residential | 497,480 | 513,028 | 524,609 | + 9.0 | + 8.2 | + 9.4 |
| Commercial | 319,978 | 333,041 | 314,921 | + 0.9 | + 5.9 | + 2.4 |
| Industrial | 844,425 | 827,262 | 956,056 | -10.0 | - 5.8 | + 5.6 |

Source: Edison Electric Institute

**Non-Farm
Employment¹**

| | State of Michigan | Detroit Met. Area | Flint | Grand Rapids | Lansing | Saginaw | Upper Peninsula |
|-------------------------------|----------------------|----------------------|---------|-----------------|---------|---------|--------------------|
| September 15, 1956 | 2,519,000 | 1,344,000 | 128,500 | 128,600 | 76,000 | 57,400 | 86,400 |
| October 15, 1956 | 2,602,000 | 1,410,000 | 135,400 | 130,600 | 75,600 | 62,500 | 84,700 |
| November 15, 1956 | 2,656,000 | 1,449,000 | 144,400 | 131,400 | 79,800 | 63,000 | 83,300 |
| Percent Change from Year Ago: | | | | | | | |
| September 15, 1956 | —4.2 | —4.6 | ... | —1.9 | —7.3 | —10.6 | ... |
| October 15, 1956 | —2.5 | —3.5 | ... | —1.1 | —2.7 | — 2.6 | ... |
| November 15, 1956 | —2.3 | —2.6 | ... | —0.3 | —4.1 | — 3.1 | ... |

Total Unemployment¹

| | | | | | | | |
|-------------------------------|---------|---------|--------|--------|--------|--------|-------|
| September 15, 1956 | 259,000 | 171,000 | 17,300 | 7,800 | 6,000 | 7,300 | 4,600 |
| October 15, 1956 | 171,000 | 107,000 | 10,500 | 5,500 | 6,200 | 2,400 | 4,700 |
| November 15, 1956 | 135,000 | 81,000 | 3,700 | 5,100 | 3,000 | 1,900 | 5,600 |
| Percent Change from Year Ago: | | | | | | | |
| September 15, 1956 | + 89.1 | + 69.3 | ... | +116.7 | +150.0 | +630.0 | ... |
| October 15, 1956 | + 85.9 | +137.8 | ... | +103.7 | + 12.7 | +140.0 | ... |
| November 15, 1956 | +101.5 | +131.4 | ... | +142.9 | +100.0 | +111.1 | ... |

¹Labor force estimates from May 15 on have been newly revised by the Michigan Employment Security Commission on the basis of recently developed benchmarks. Revisions where necessary, are being made back to January 1949 by the Commission. These estimates are not necessarily comparable with the labor force information given earlier by this agency.

²Revised labor force estimates for Flint and the Upper Peninsula have not been made available at the time of this writing for the period prior to May 15, 1956.

It is pretty to see what money will do.

Samuel Pepys, Diary, 21 March 1667-8.

WHAT THIS COUNTRY NEEDS IS A GOOD ONE-CENT NICKEL

Want to win a sure bet? Guide the conversation toward devaluation of the coinage — this part isn't hard; wait for someone to introduce that old gag, "What this country needs is a good five-cent nickel". This is your cue to say modestly, "Well, after all, the nickel is worth more today than it was a century ago, isn't it?" You are sure to catch someone with this statement, and your bet is now tied up. You then produce the following fact: in 1856 there was introduced a coin of the same alloy (3 parts copper, 1 part nickel) as the piece under discussion. It was called a nickel, and it was worth 1¢. It was discontinued in 1864, two years before the 5¢ nickel was introduced. You will now have won your bet, no doubt a sizeable one, but you will not be popular.

(For factual data, see "Topics of the Times" *The New York Times*, May 16, 1956).

CORRECTION

We figure it is starting the new year right to acknowledge how terribly wrong we are about almost everything. Take the Thomsonite, which we extolled in our November issue as Michigan's chief semiprecious stone. You will recall that we stated they are found only in the Grand Marais in Alger County "and no place else on earth". The Greeks had a word, *hubris*, for the sort of pride that can lead man into untenable positions, and we were so led in so saying. Our *hubris* has been avenged upon us by determined gem-lovers-and-polishers, who remind us that "the same stones are found in great quantities in the Keweenaw Peninsula and possibly on Isle Royale". Quite correct, and we did saw that limb off behind us, as one critic said, and we should have known better, because the editorial Thomsonite which inspired the item in the first place is worn upon the third finger of the sub-editorial right hand and came from Isle Royale. The next people who disagree with statements we make about gem stones are asked to submit a shoe-box full in support of their letter. These are not returnable, especially if they come from Kimberley, South Africa.

ANNIVERSARIES AGAIN

There is something about anniversaries. The pleasure of contemplating what happened one hundred years ago is somewhat the pleasure of looking the wrong way through a telescope; or of seeing one's self reflected in an infinite series of mirrors: in other words, it is the prospect of the familiar rendered unfamiliar. Two important hundred-year-old events that have served to make a decisive mark upon all our lives have real claims to be commemorated. 1856 was the year in which Henry Bessemer invented a steel process which was to convert a comparatively rare metal into the chief material of the expanding railway system. It was also the year of a no less important discovery that marked the birth of the organic chemical industry of today. This was the synthetic manufacture of the purple dye known as mauve or aniline purple, an event which marked the end of the three-thousand-year-old trade in the precious dyestuff called Tyrian Purple, extracted from a small shellfish of the eastern Mediterranean. After 1856 any housewife could have as purple a gown as any empress; a symbol of social inequality had been done away with by eighteen-year-old William Henry Perkin, with his home-made laboratory equipment.

ATOMS IN INDUSTRY

By JAMES STOKLEY*

As citizens of a world undergoing accelerating changes, it behooves us to understand these changes to the extent of our abilities. This comprehension comes easier when the guidance is expert. Here an able writer on science shows some of the things ahead for industry in the realm of the atom.

With the opening of the atomic age there have been a variety of reactions to this new force. Many think, with fear and terror, of the atomic bomb and its vast potentialities for destruction. On the other hand, the United Nations Conference on the Peaceful Uses of Atomic Energy, held at Geneva, Switzerland, in 1955, showed clearly that it can bring great benefits, particularly as a new source of power. With the shortage of conventional fuels a present problem in some parts of the world, and a threat for the future in others, the atomic nucleus offers a welcome new supply of energy. It seems to eliminate any fear that the advance of our economy may have to be curtailed during the next century or so, as supplies of coal and oil approach exhaustion.

It is in the atomic reactor that the splitting uranium nucleus releases a little of its store of energy in a controlled chain reaction (unlike the atomic bomb, where the reaction is allowed to go out of control). While the radiations emitted by this reaction impose some special problems not encountered in burning coal or oil, it is—like ordinary combustion—primarily a source of heat. Such heat may be used to turn water into steam, which

is then fed into turbo-generators producing electricity.

If desired, instead, the heat may be utilized directly. Except in a few cases where atomically-produced heat, which might otherwise be wasted, can be applied as a by-product, it seems to have limited applications for heating buildings. However, it may prove a valuable source of "process heat." This is heat used directly in making many materials, such as rubber, cement, glass, paper, chemicals, metals, and petroleum. Since about a tenth of the nation's total energy consumption is now used in this way, it might prove a good market for heat from nuclear sources, even though some processes require temperatures as high as 3,000° F., well beyond the capability of any present reactor. By 1980, according to an estimate by the AEC, atomic sources might be able to supply as much as 10 per cent of the process heat used by American industry.

The Search for Uses

The Department of the Interior, with the Atomic Energy Commission, has made a preliminary study of the possibilities of using atomic heat for distillation of salt water, to provide fresh water for irrigation, or for municipal and industrial purposes. However, while this might provide an application for waste heat from a nuclear power plant, if it happened to be in a suitable location, it does not seem that atomic energy would have any significant advantages.

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Another AEC study, with the collaboration of the United States Bureau of Mines, has been concerned with the gasification of coal. In the process contemplated, steam heated to temperatures of between 2,000° and 3,000° F. would be made to react with the coal right at the mines, producing gas that could be used in much the same way as natural gas. This would eliminate the need for expensive transportation of solid fuel, since the gas could be carried through pipelines.

Other possible applications, in which some interest was expressed by various groups when the McKinney Panel made inquiries, are in the extraction of nitrogen from the air, to make fertilizers, nitric acid, and other essential chemicals; in making acetylene and in the smelting of iron and copper.

But heat is not the only form of energy given off by atomic reactors and their products. The nuclear radiations which are also emitted open up broad new fields of technology. The report to the Joint Congressional Committee on Atomic Energy by their Panel on the Impact of Peaceful Uses of Atomic Energy (headed by Robert McKinney) stated:

"Radiation energy cannot be thought of in the same terms as heat energy. For example, while an ordinary one-watt light bulb produces a barely perceptible amount of light or heat, a one-watt source of gamma radiation could kill a man in less than one hour. Research at Commission and industrial laboratories has demonstrated that radiation can be used to supply energy to initiate some chain chemical reactions and to supply all the energy required in basic chemical reactions. Radiation energy can also accomplish changes in the structure of materials and even create new materials which

are difficult or impossible to produce by other known methods. . . .

"The future of atomic radiation is . . . speculative since little is known concerning the effects of massive quantities of radiation on various industrial processes and materials. Yet the prospect of substituting radiation energy for heat energy appears to offer real prospects in the food processing and chemical industries and may conceivably indicate a new direction from which future supplies for a different kind of energy than that now commonly used may come. Remembering our comparison of a one-watt light bulb and a one-watt gamma radiation source, it is apparent that a small amount of energy in the form of atomic radiation can be substituted for a relatively large amount of heat or electric energy in some industrial processes."

In some cases the radiation may have a trigger effect, starting a chemical chain reaction that is carried along the rest of the way by chemical energy. This occurs in the process of polymerization, by which plastics are made. The molecules of these materials are long chains, the same links being repeated hundreds of thousands of times. The unit is called a monomer and in this form it may be liquid. Then, when the necessary catalyst is added, these monomers link themselves together to form the long-chain polymers, and so the material solidifies.

Butyl rubber, polymethyl methacrylate (used where glasslike transparency is wanted), polystyrene (an important electrical insulator), polyethylene (of which "squeeze" bottles are made), and many other plastics that are now used in large quantities are of this type; and in them all the polymerization process—the linking together of the individual units—can be initiated by radiation.

Whether radiation would be justified in their manufacture may be questionable, for only relatively small quantities of catalyst are needed to start the process by present techniques. The reaction vessels in which it is carried out are not expensive, while radiation equipment may be quite complicated. However, if it will simplify the operating conditions in any way, or permit some other advantages, a change might be justified.

The process of "grafting" is a familiar one in horticulture; for example, a dwarf apple or pear tree may be produced by growing these fruits on a quince tree. The process of "graft copolymerization" applies an analogous technique to chemistry. The ordinary polymer consists of the same unit repeated over and over. A copolymer is one of two different kinds of links, randomly distributed, while a graft copolymer is one with a chain of one polymer, upon which chains of another are grafted at certain intervals. Just as with the apple and quince, desirable properties of two different substances may thus be combined in one.

Although silicone rubber is resilient over a considerable range of temperature it is not as resistant to solvents as acrylonitrile. Perhaps a graft of acrylonitrile on silicone rubber might produce a new type, which would be both solvent-resistant and resilient. Although such work is now in its early stages, work at the Brookhaven National Laboratory, by Dr. Bernard Manowitz, indicates that radiation techniques may make such grafts possible.

Rubber is a polymer and, for most applications, is vulcanized by the process originally discovered by Charles Goodyear. This sets up cross-linkages from one polymer chain to another, making the product much stronger.

Studies by the Goodyear Tire and Rubber Company, and the Wright Air Development Center, have demonstrated that vulcanization of rubber may be accomplished by radiation.

Work at the General Electric Research Laboratory has shown that something similar may be done to polyethylene. The unbreakable squeeze bottles made of this plastic, in which many products are now marketed, have been limited in their application because they collapse into a shapeless mass when exposed to a temperature about that of boiling water. Thus, it has not been possible to sterilize them by steam or other heat, a process that would be necessary if they were to be used for medical applications.

The General Electric Company scientists, however, found that if such bottles are exposed to high-energy radiation they could be subjected to temperatures considerably above the boiling point of water, and still hold their shape. This process is now being applied to the production of a polyethylene tape for electrical insulation, which will stand much higher temperatures than standard tape.

In addition to these cases, where radiation triggers off a chain reaction and supplies only a small fraction of the total energy required, there are other chemical processes for which radiation can furnish all the energy needed. Experiments have been made which indicate that such chemicals as carbolic acid, hydrogen peroxide, glycols (one of which is used as a permanent anti-freeze in automobiles), and hydrazine are considered possibilities for such a mode of manufacture.

Hydrazine is particularly interesting. This is a compound of nitrogen and hydrogen (N_2H_4), similar to ammonia (NH_3), which burns with a violet

flame. It has great possibilities as a fuel for rockets or jet planes, but is made at present by a rather expensive process. Dr. Manowitz suggests that if a radiation process can be economically applied, every plant now making ammonia could turn out vast quantities of hydrazine.

Other Radiation Sources

Radiation for such application can come not only from a reactor, or from reactor products. The experiments on polyethylene, at the General Electric Research Laboratory, were done with a million-volt X-ray machine, modified to give cathode rays of similar energy. In other laboratories, electrostatic machines, of the Van de Graaff type, have been used to produce these radiations. Unlike radioactive isotopes, which gradually decay in intensity, the cathode ray generator gives a steady output. Moreover, it emits radiation only as needed, while turned on. The radioactive materials emit it constantly, whether it is wanted or not, until they reach the end of their lives.

The reactor itself represents a source of radiation. With a homogeneous reactor, or one using liquid fuel, the radioactive gases produced by fission may be steadily drawn off and used on the spot for radiation. With solid fuel reactors there are several possible methods. The fuel elements that have seen service, and have become loaded with fission products, might serve as radiation sources before they are put through the reprocessing plant. The fission products themselves, after having been removed, can be used as sources. One of these is cesium 137, with a 37-year half-life, which emits both beta and gamma rays. Then again, cobalt may be placed in the reactor, in a place where otherwise the neutrons would not be utilized. By such means

ordinary cobalt, of mass 59, is converted by neutron capture into cobalt 60, a beta and gamma emitter of 5.3 years half-life, which finds many uses as a source of radiation.

That ample radiation sources will be available in the future is indicated by an estimate that, by 1980, with 137 million kilowatts of power available from nuclear fuel, the fuel elements will yield about 100,000 kilowatts of radiation power per year, while 20,000 kilowatts from cobalt 60 and 3,000 kilowatts from cesium 137 will have accumulated by 1980.

Use in Thickness Gages

One of the most widely used applications of radiation is the beta-ray thickness gage. Sheet aluminum, as well as plastics and other products, may be made by passing the material between two heavy rolls, a fixed distance apart. To maintain proper thickness, it is necessary to check the product, and readjust the rolls if there is any variation. If this were to be accomplished with hand-operated calipers, it would be necessary to stop the process and take a measurement.

Measurement on the fly, however, is possible with beta rays. All that is needed is to place on one side of the sheet material a source of beta rays (such as strontium 90) of known intensity, and on the other a radiation detector that measures the amount that passes through. The thinner the sheet, the stronger is the transmitted beam; thus the gage may be calibrated to indicate directly—say in thousandths of an inch—the thickness of the metal, plastic, or other material, even as it moves along at high speed. Moreover, a degree of automation may be introduced, by having some sort of automatic control of the space between the

rolls, which, in turn, is regulated by the reading of the thickness gage.

In 1954, 350 companies were using these gages, and several large companies (rubber and abrasives) reported estimated savings of \$100,000 per gage per year. Assuming three gages per company (the actual range was from one to twelve) an annual savings of from a minimum of \$25,000 to a maximum of \$100,000 per gage, the AEC estimated annual savings from a probable of \$25 million to a high of \$100 million.

While beta rays have rather low penetrating power, they can get through things like paper, plastics, and aluminum, if it is not too thick. Gamma rays, on the other hand, like X-rays, may penetrate even considerable thicknesses of iron and steel. Radium has been used in the past as a source of gamma rays to take radiographs of thick castings, and now such reactor-produced radioisotopes as cobalt 60, yttrium 88 (with a 100-day half-life), or tantalum 182 (113 days) can be used in the same way. In many large plants, X-ray generators of 1 or even 2 million volts energy are used for a similar purpose.

The radioisotopes, however, make a more compact and portable means of taking such radiographs. For example, the Ford Motor Company is well equipped with high-voltage X-ray equipment, but in one case the company purchased nine huge steel pots, each to hold 100 tons of slag from their steel mill operations. Some external defects appeared which were questioned by the inspectors. As the pots weighed 30 tons each, it would have been difficult to move them to the X-ray laboratory and cobalt 60 radiographs were made, inspecting them where they stood. The radioactive isotope was placed inside the over-

turned pot and X-ray films were placed on the outside surface, thus recording a shadow picture of the internal parts of the metal.

In another case, a three-story office building was erected at the Ford plant, using floors constructed of prepoured concrete. These were raised and held in position by plates welded to the roof support beams. It was necessary to test these welds, since the outer appearance was not sufficient to show their quality. Here again cobalt 60 was used to produce the gamma rays with which radiographs were made, showing that the welds were safe.

Such tests can produce a real saving in costs of construction, since the boiler code of the American Society of Mechanical Engineers permits pressure vessels to be made of 12 per cent thinner boiler plate if the structure is completely radiographed. This not only allows a 12 per cent saving in the amount of steel used, but also the welders' time is saved, since they are welding thinner pieces. On one Horton-sphere fifty feet in diameter, used to store gases under high pressure, the net savings were figured at about \$6,000. Several thousand such spheres are in use.

Further Radioisotope Uses

Radioisotopes are also finding countless industrial uses as tracers, where their radioactivity permits some particular substance to be followed, even through an intricate process. One such use is in sending oil through pipelines that may be thousands of miles in length. These pipes are used to carry various kinds of petroleum products. After one kind of oil has gone through, another will be sent along immediately following, and there is very little mixing at the interface.

However, at the receiving end it is necessary to know accurately when this interface arrives. Then a quick shift is made in the valves, so as to feed the new arrival into a different tank. If it is necessary to wait until the second product actually starts pouring out at the end of this pipe, the previous product may be seriously contaminated. Therefore at the refinery, just as the new kind of oil starts, a radioisotope is injected and is carried along with the flowing oil. At the other end a workman waits with a Geiger counter against the pipe; when the interface arrives there is an outburst of clicks that tells him the time has come to shift to another tank. With the switch made at the right time, there is very little mixing.

This also has produced important savings. As of 1954, an AEC statement reported, at least three oil companies were using this method and others were expected soon to follow. These companies reported that every time the method was used they saved about \$500. Since it may be used an average of three times daily the year round, annual savings have reached perhaps \$2 million.

Antimony 124 is the isotope generally used. Since it emits gamma rays as well as beta, it can easily be detected through the pipe. With a half-life of 60 days, it lasts long enough to travel the distance, and as it decays it turns into a stable isotope of tellurium; therefore, no long-lived radioactivity remains in the oil.

One oil company made use of radioisotopes to study problems of wear and lubrication in gasoline and diesel engines, and to find the effects of various lubricants. This involved a determination of wear on the piston rings, as they slide up and down inside the

cylinder. To run the engine long enough for worn metal actually to appear on the cylinder walls might take many months, but radioactivity gives the answer in hours.

A new piston ring is inserted in a reactor, where the action of neutrons makes it radioactive. Then this ring is placed on the piston of an engine, which is operated in the usual way. The oil employed is not originally radioactive, but it soon becomes so, from a minute amount of material worn off from the ring, and by measuring this activity accurately, the exact amount of wear is determined. Also, it is possible to place a photographic film against the cylinder wall, after the engine has been running. This makes a radioautograph, for, where the surface is radioactive, the film is exposed, while other parts are unaffected. Thus, when developed, there is a picture of the radioactive areas, the density indicating the strength of the activity and the amount of material worn off the ring.

Atomic radiations ionize air and make it electrically conductive, so that a charged body will be discharged if some radioactive materials are near by. This effect is utilized in the dosimeter, worn like a fountain pen by workers in atomic plants to show the amount of radiation they are receiving. At the beginning of a period of work the device is charged to a known level, and at the end its charge is again measured. From the amount that is lost, it is possible to tell how much exposure to radiation the worker has experienced.

This same principle is utilized in the printing industry, where sheets of paper coming from a press may acquire a charge of static electricity. This causes one sheet to repel another, and it is hard to stack them. Formerly, it

was often the practice to have a gas flame arranged so that the sheets would pass over it quickly as they left the press. The flame also ionizes the air and lets the charge leak away. Ordinarily, the paper moves so rapidly that it does not ignite, but there may be some fire hazard. A bar containing polonium, which occurs naturally and emits alpha rays, or some similar isotope, produced in a reactor, may now be placed near the sheet, thereby discharging it.

Although the thickness gage is perhaps the most important radioisotopic application in process and quality control, there are many others. In separating a mixture of compounds, such as the different hydrocarbons present in petroleum, an extraction column may be used. This is a vertical tube, packed with a material that has selective absorption for the different liquids passing through it. Some will go more rapidly than others, and it is necessary to know when one has gone through, or another started. This can be done by introducing into the mixture a sample of one of the compounds present, prepared with a radioactive isotope of carbon or another element that it contains. This will behave just like the nonradioactive compound, and go through the column with it, but a detector at the bottom will show when the tagged atoms arrive. Similarly in other chemical processes the same methods may be employed.

One is in the catalytic cracking of petroleum to make gasoline and other types of oil, the introduction of radioisotopes permitting the process to be followed closely. The AEC has reported that, by such means, one oil company saved an estimated \$100,000 by avoiding a week's shutdown and the loss of gasoline production that

would have been suffered. This tracer technique for cracking control is now a standard part of the company's operation and other companies have been licensed to use it. The AEC estimates that an annual saving of between \$1 and \$5 million has resulted.

In testing the wear of tires a rubber company added a radioactive compound to the tread when they were made. A car could be equipped with one of these tires, and driven around. Then, as wear occurred, the radioactivity of the tread would be reduced. This could be measured even while the automobile was moving, with a radiation detector close to the tire.

Similarly, in testing effects of detergents and their efficiency as cleaning agents, samples of cotton were treated with radioactive dirt. The radioactivity, measured before and after washing, gave a very accurate index of how effectively the dirt had been removed.

In an assembly line where production parts are dipped successively into a coating material, and some automatic means is desired to stop the process when a certain thickness has been reached, a small amount of radioisotope may be added to the coating solution. Then, as the product passes down the line, it may pass a series of Geiger counters, which indicate the degree of radioactivity and hence the thickness, which could thus be kept uniform.

In making steel by the open-hearth process, it may be desirable to keep a continuous check on the distribution of phosphorus between the slag and the metal. If a small amount of radiophosphorus were added to the molten bath, it would go into the slag, along with the normal phosphorus. By measuring the radioactivity of samples removed periodically the percentage of the element in the slag can be determined.

The same thing can be done with sulfur.

To measure pollution in a stream, some radioactive material may be added to the stuff being dumped. Then a sample of the water may be taken downstream, and its radioactivity measured. If there is none, it would generally mean that there is no pollution. Something similar may be done to measure the flow of a liquid. A bit of radioactive tracer may be injected, so as to be carried along. Then, by measuring the time it takes to pass two Geiger counters, a known distance apart, the rate of flow can be found.

Pneumatic tube systems are often used in large plants to carry orders and other messages, but sometimes the carrier gets jammed and the failure is hard to locate. In this case, a small and harmless quantity of a radioisotope may be applied permanently to the carrier. If it becomes stuck, all one has to do is to check the length of the pneumatic tube, from the outside, with the Geiger counter, and radioactivity will be encountered when the jammed carrier is reached.

A radioisotope may also serve as a leak detector. For example, one factory had a radiant heating system, of pipes embedded in the concrete floor and through which hot water was circulated. When a leak developed at some unknown point in the system, it seemed as if the piping would have to be dug up until the leak was located.

Instead, a salt containing sodium 24, which emits gamma rays, was dissolved in the water. A technician went all over the floor with a Geiger counter until he found a place from which there was considerable radiation. Here the radioactive salt had leaked out and accumulated, and it was possible to pinpoint

the leak and take up the floor at the right place. Since the half-life of sodium 24 is only 15 hours, after a few days its activity had dropped practically to zero. Thus, there was no long-remaining activity to constitute a hazard to workers.

Future Goals

Summarizing these various industrial uses of atomic energy products, the report of the McKinney Panel said:

"The one million dollars worth of radioisotopes now being sold annually by the Commission to industry are making possible savings through process and quality controls estimated at \$100 million annually. This important business is growing larger with every new idea. It contrasts sharply with atomic power from which few, if any, have so far made money.

"Produced as byproducts of nuclear reactors, these radioisotopes provide industry with small sources of radiation and tracers. These atomic tools are so cheap, require so little investment, permit such prompt returns, and are so free from information control restrictions that their use is expanding rapidly.

"Radioisotopes are being used in industry, but greater significance may lie in future utilization of atomic heat and radiation. Process heat and radiation in such industrial fields as food preservation and industrial chemical production hold important promise. Many other major areas undoubtedly exist for both atomic heat and radiation.

"These goals for industrial research and development could make real contributions to our economy. They are within the competence of existing industrial research strengths."

STATE PARKS: A PROBLEM ON OUR DOORSTEP

By ANNE C. GARRISON*

The time of year, the construction of the great bridge, the heavy pressure on Michigan's vacation facilities combine to make this study of a principal aspect of one of our greatest industries a matter of immediate concern to us.

Calvin Coolidge's remark about his preacher's attitude toward sin¹ has many applications in more mundane fields. Just as everyone is against sin, so everyone is in favor of nature. A fine stand of aspen has the approval of all of us; we unite in an all-over sentiment that God is good to Michigan. But aside from our general reluctance to shell out the funds to protect that timber for the uses of us nature-lovers, there is a good deal of irreconcilability on what those uses should be. The concord of outdoor people is more apparent than real. The hunter sees in the aspen satisfactory browse for the deer he hopes to shoot; the fisherman sits down to rest in its tremulous shade, trusting there is no fellow-sportsman within a mile to spoil his sport; the lumberman nowadays respects the needs of the rest of us for a well-run forest, but still he scans the tree and reckons when it will be profitable to harvest it; the hiker or skier appreciates the aspen but wants its branches lopped where they impede his trail; the camper wishes to anchor his tent to the trunk and hang his toothbrush on a handy twig. Finally the nature-mystic or artist wants the wilderness left strictly alone for purposes of oil-painting, meditation, and the encouragement of latent poetry in the soul.

*Mrs. Garrison is Associate Editor of *Business Topics*.

¹Mrs. Coolidge: "What did the preacher talk about this morning?" Coolidge: "Sin."

Mrs. C.: "Well, what was his attitude about it?" C.: "He was against it."

It is the difficult task of the Department of Conservation to see that all these nature-lovers are kept out of each others' hair and given their disparate satisfactions. To serve the needs of an outdoor-minded population, the Department controls, among other facilities, a system of State Forests and State Parks. It is the Parks that chiefly concern us here. The subject is a timely one on several grounds, not least of which is the fact that this issue of our magazine appears at that unfortunate time of year when most nature-lovers are reduced to wistfully applying saddle soap to their boots, or to spreading the pup tent in the recreation room to free its folds of our usual 90% humidity. (One friend of ours, with a Bemis crawl-in tent that can be set up without pegs, spends a few nostalgic February nights in it, in the living room. He would be the first to deny this). Time of year, then, makes State Parks as obvious a topic as seed catalogues, but other considerations also urge us to pay heed to this subject.

Bring Your Own Card Tables

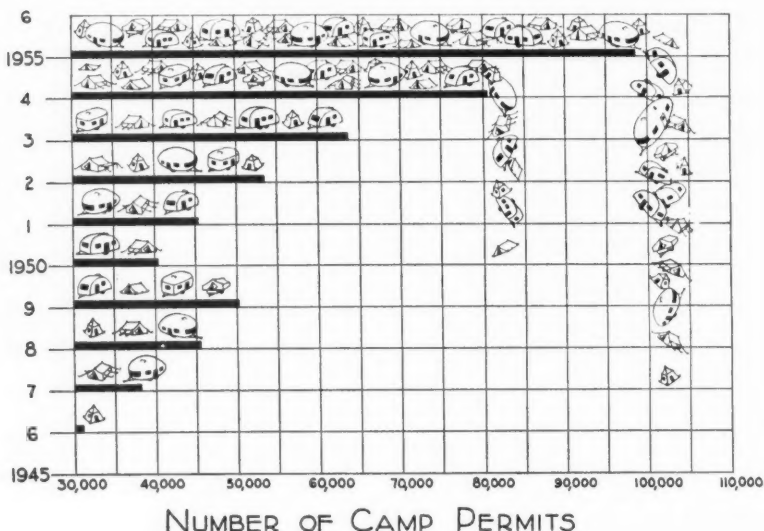
We are becoming a nation of greater and greater leisure, as we are so often reminded; this is a fact that bears particularly hard upon Michigan, which combines a highly industrialised working population with large recreational areas. As our population grows, as the work week decreases, as the standard of living brings amenities like trailers, hip boots and deer rifles within the

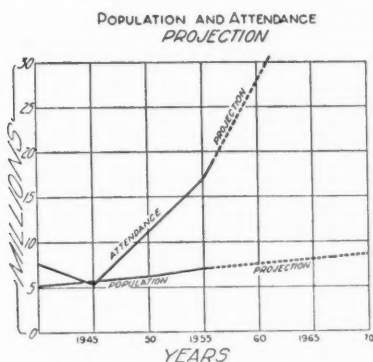
reach of more and more of us, the pressure upon our outdoor facilities is becoming literally intolerable. The figures speak for themselves: to take one particular aspect of the park problem (but one which accurately reflects other growth problems) consider Chart I, showing the number of camp permits issued each year from 1940 to 1956. To the uninitiated, this graph, with its tents and trailers falling off the end of the line and cascading downward, may seem a bit of whimsy, but the hardened camper will shudder, recalling his experiences of overcrowding in state or national parks. He will remember sleeping with his family in the car because the park he reached at sundown was too full to receive him. He will remember tents washed away in cloudbursts because emergency campsites had not been adequately laid out in respect to slope and drainage. He will remember longest of all those camps where the ratio of plumbing to

population had risen so high that a visit to the toilet meant standing in line for a ten-minute wait in the rain. Even the day camper, fortified by knowledge of his own refrigerator and bed at the end of the day's outing, may recall having to take his own cardtable with him to insure a surface on which to spread his picnic dinner.

It is surprising that people will put up with such major and minor inconveniences for the sake of hanging their toothbrush on an aspen. Larger and larger numbers each year are willing to endure more and more intolerable conditions in order to love nature, or to get away from their over-automatised homes.

More Trouble Ahead. To return to the chart, it is apparent that the overflow is increasing faster than the growth of the park system. The reason is not far to seek, in terms of the state's growth and its attractiveness to citizens





of less favored areas. At the present rate of growth of both population and parks, we are in for real trouble. A scientific projection of population and park attendance figures carried through the next 15 years (Chart II) shows that short of a major cholera epidemic our growth will be such that the outdoor facilities of the state will soon be stacked three deep with nature-lovers. Note that population growth plays a minor part in this increased pressure, compared with mobility and leisure.

History of Michigan Parks

Such is the disturbing prospect which demands the thoughtful consideration of us all. Before asking ourselves what is to be done about it, let us have a look at our parks, their history and their present layout. A foresighted legislature, back in 1919, established our modern state park system, creating a commission to administer it. Gifts of land for park purposes were generously made by counties, cities, townships and individuals. The first of all the tracts was that which makes up D. H. Day State Park in Leelanau County. By 1921 the Commission had been succeeded by a newly-formed Department of Conservation,

but within that short period of its activity it had accepted and put into operation 23 park sites. Lavish giving by local governments and private persons continued for many years: through 1935 almost all park land had been thus acquired. But though generosity may be unlimited, the number of square miles in Michigan is finite, and by 1940 it became apparent that if the parks system was to continue to grow, purchases would have to be made in a competitive market. Not only were desirable sites less available than formerly, but they were likely to be already owned by those who wanted to keep them. Moreover, the concept of park use was becoming broader, necessitating sites of more varied nature.

The chief pressure toward the acquisition of new sites was, of course, the frightful increase in park use that we have already discussed. Average attendance of recent years has been increasing at an annual rate of almost 9% annually — and this rate is rising. In the 1955 season well over 17 million people enjoyed, or struggled to enjoy, our overburdened park system. Such is the present picture, rendered doubly depressing by the projections for the future.

Note that whatever aspect of the park topic is under discussion, we are led back at once to the stone wall of the recreational crisis due to overuse and underdevelopment. Inescapable as the problem is, let us try again to dodge it momentarily by considering the various types of parks available in the state.

Types of Parks in Michigan

Michigan has only a single National Park within its boundaries: Isle Royale. (For information, write the Superintendent, Isle Royale National Park, Houghton, Michigan.) For other rec-



Bursting at the Seams: Trailer Space in Holland State Park.

reational facilities we must depend upon what God, the last glacial age with its impounded waters of the Great Lakes, the Department of Conservation and its good works, the Legislature, with its control over the tax dollar, and the public with its ability to elect the legislature, provide. The variety of these facilities is surprisingly wide. It deserves a brief survey, for users of one type of park are sometimes oblivious that the other types exist.

Camping (the outdoor sport of philosophers) is very widely available. All of the 47 parks except Mackinac Island and a few day camps in the Detroit metropolitan hinterland are open to tent and trailer campers, as are several of the state's Recreation Areas and all

State Forests, as well as the five National Forests. (Tip to solitude seekers: National Forests are likely to offer the least crowded sites in a given area.) Camping permits can be obtained for 15 days from the local State Park Managers, and pulling up stakes and moving a few yards to the next site will give you another 15-day stay. The most crowded parks, Holland and Grand Haven, restrict your sojourn to 10 days. Once again overcrowding comes into the picture, whatever the topic.

The choice of scenery the stationary nature-lover can enjoy is as varied as the state itself from the almost impenetrable forest growth and infinite lake horizon of Wilderness, 8 miles west of

Mackinaw City, to the more pastoral vistas of White Cloud, in the valley of the White River; from the remote reaches of the Porcupine Mountains, our westernmost park and the highest point in the Middle West (rising to a cloud-capped elevation of 2,023 feet above sea level), to the gentle contours of the Irish Hills, where W. J. Hayes State Park fronts on the fine sandy beach of Wampplers Lake. The camper will encounter no rattlesnake-infested desert campsites such as those in the Badlands, nor will he face the difficulty of boiling eggs at 9,000 feet, as in Rocky Mountain National Park, but within our considerable limits of topography he can find just about what he wants. If he likes to collect superlatives, D. H. Day Park, our oldest,

lies in sight of Sleeping Bear Dune, the largest in the world.

Many camps have special sites and facilities for groups. Group campers are defined (by others) as those who come in numbers of thirty or more, usually by bus, and sing "I'm Dreaming of a White Christmas" by the light of gasoline lanterns. It is almost impossible to carry out a program of bird watching if you are in the same area with group campers.

Fishing. In practice, fishing sites are likely to be those parks where fishermen gravitate. Not all fishing sites are in Parks; not all Parks permit fishing. A good example of a State Park dear to the fishing-minded camper is Indian Lake, 4 miles west of Manis-



Back to Nature: Bring Your Own Card Table.

tique, where the angler can take bass, blue-gills, perch, pike and wall-eyes in the heart of the romantic Hiawatha country immortalized by Longfellow. There are many Parks, Recreational Areas and Forests under state supervision where fishing is permitted.

Hunting. As a rule, hunting is not allowed in the Parks, for self-apparent reasons. However, some campgrounds are popular with deer hunters. Certain Park areas, such as a large part of Wilderness and all of Porcupine Mountains, are open to hunting in season.

Day Camps. In the highly industrialized area around Detroit, the obvious development is toward day camps, of which Dodge Brothers Number Four may be taken as an example. The emphasis at such sites is on extensive picnic and playground facilities, beaches, bathhouses and large parking space. As would be expected, such camps are overcrowded on weekends. They are also very popular as sites for industrial or club outings and family reunions.

State Recreation Areas. Closely akin to the day camp type of development are State Recreation Areas. Twelve of these, comprising some 55,000 acres of land and water, lie within 60 miles of Detroit. One other, Yankee Springs, is in Barry County. The Areas offer unexcelled opportunities for many types of recreation, not least important of which is the enjoyment of the state of nature to which large tracts have been allowed to revert. Several of the sites incorporate old state parks, and most of the land in this category is open for hunting in season. Mention should also be made of the Wayne County Park System and the Huron-Clinton Metropolitan Authority, which provide much the same

sort of facilities, but lie outside the State system.

Special Historical Sites. Certain Parks owe their existence to the presence of ruins or reconstructions of interest in our state's history. As historical events are likely to take place at spectacular spots (e.g., Harper's Ferry, W. Va.), these Parks would be points of attraction quite apart from the history they enshrine. Foremost among such Michigan places is Mackinac Island State Park, the site of historic Fort Mackinac. The park comprises 2,180 acres of the uniquely beautiful island, and an unmeasurable and indescribable view of Great Lakes shipping. This Park has its own Commission, which also administers Michilimackinac State Park, 27 acres on the Straits, also with its own historic fort and a closer view of the shipping. Lovers of history are free to try to untangle the history of the moving of fort sites from shore to island to shore to island, and the vicissitudes of the spelling of the names.

Other Parks with special historic interest include Palms Book, with its famous spring; Muskegon, with its faithful reproduction of a timbered blockhouse overlooking the Lake; Interlochen and its virgin timber, relic of a peninsula once entirely forested; Hartwick Pines, with its logging-camp buildings; and Fort Wilkins, with well-preserved remains of a United States Army outpost and a copper-mine shaft.

Those who prefer to study history in the making can enjoy the convenient camping in Straits State Park at St. Ignace. Here is a fine vantage point from which to view progress on the new bridge. Here visitors can ponder on the fact that the entire Upper Peninsula, about to be available as never before, contains only 11 of our 47 Parks. The building of the bridge will not only



Waiting at the ferry: a scene from the past, we trust. (Courtesy of the Mackinac Bridge Authority)

alter the general economic picture to the north, but will specifically affect all aspects of the region's tourist industry, including the need for additional parks.

Winter Sports. There is a growing tendency among outdoor lovers not to put away their hobby in mothballs through six months of the year, but to devote half of this wasted period to fracturing their femurs on the powdery snow of ski runs or the glare ice of a favorite pond. Skiing is getting more attention than formerly from our Park administrators. Porcupine Mountain has a tow, and slopes of varying degrees of difficulty. There is a tow in the Pinckney Recreation Area, and Pontiac

Lake, among others, offers winter sports facilities. Almost exclusively for this season's use is the Grayling Winter Sports Area. It combines high hills and plains that are within convenient reach of our population centers. Every possible convenience is provided for outdoor sports that depend upon freezing temperatures.

Comparison With Other States

Michigan stands 4th of the states in percentage of the national tourist business it receives; yet it expends less per visitor for its State Parks facilities than does any other of the leading 5. New York and California, according to the latest available figures, took in more

than 20% of the tourist dollar, and were also leading spenders on parks to make the traveller happy. California spent almost 75¢ per visitor in this way as opposed to Michigan's 13¢. The implication seems to be that while we wish visitors to enjoy our *peninsulam amoenam*, we are not prepared to make it easy for them to *circumspicere*. You cannot enjoy such a pleasant peninsula without staying in it and playing in it, and park facilities make the delightful sojourn possible to many who would not otherwise have a Michigan vacation, or so long a one. Other states, and certainly the National Park system, are feeling the same terrific pressure we experience, but it would appear that 12 states are prepared to woo the traveller more ardently than are we. Even Kentucky, which seems to us far less endowed by nature, outspends us by 45¢ per visitor for its State Parks.

Policy of Expansion

What is the future of our State Parks to be? Ultimately the answer rests in our own hands, for we elect the legislature that grants the money to run them. A park-minded population will find ways to convey its concern to its representatives, and to facilitate the increasingly difficult task of providing for the outdoor needs of an increasingly mobile population. We would not underrate the difficulty involved. Tourism is one of the three leading industries of this state, along with manufacturing and agriculture, but planning for the State's share in this enterprise is a cumbersome matter, since it is impossible to make plans for our Park system more than a year in advance. Funds for it come out of the state's General Fund, and have to be voted afresh each year. A disquieting aspect is the changing nature of this Fund.

Formerly one of its most stable sources was royalties from leased mineral rights on public lands and for a time the Parks Commission hoped to have these royalties turned over to it, to provide a steady source of the major share of the Commissions expenditures, but such a move was not made. Moreover this comfortable income is lessening as fewer exploratory drillings are being made in this period of the state's maturity. The policy of earlier retirement, greater population, better roads, and other such factors are felt so generally throughout the state that no Park within the system is too remote to feel the mounting tension. When the Full Up signs are posted at camp entrances in Porcupine Mountains it will be too late to begin to plan: the catastrophe will have happened.

The solution (or the nature of the solution) lies in long-range planning that will enable the Department of Conservation to map its needs for five years at a time and to receive an assurance of funds to cover them. Not only must provision be made for upkeep but for expansion as well. This must be done soon, as the suitable and desirable lands are rapidly being taken up by private development. Such development, naturally, tends to make the cost of needed lands prohibitive.

Specific areas in which the Department feels an acquisition and improvement program should be started immediately include the following:

- Sherman Hills near Sturgis
- Beach and upland areas at Port Crescent in Huron County
- Beach areas near Saugatuck
- Van Riper County Park on Lake Michigan in Marquette County
- Land owned by the Highway Department adjacent to St. Ignace approach to the Straits Bridge

Laughing Whitefish Falls in Alger County

In addition, key parcels in already established areas have to be obtained from private owners. All these needs are in excess of the constantly mounting budget for normal upkeep and repairs, and for needed improvements of existing facilities.

Favorable Aspects of the Situation

The truth apparently is that it takes more running than we have been doing to stay in one place. Refer to the charts to convince yourself that we are falling behind even our present needs, let alone our future ones. Yet the picture is not entirely dark. We are a rich state, able to pay for the things we want when we are convinced we have to. As we awake to this predicament we are going to correct it. On the other side of the ledger are certain favorable aspects of outdoor recreation facilities that some other areas do not enjoy. One thinks of our freedom from the constant headaches caused by the tension of conservation, flood control and power interests in certain states to the west of us. Moreover the very availability of our parks, which figures on the pessimistic side, is also a favorable factor in our future. We have no such problems as arise in the province of Alberta, which has attempted for years to complete a black-top road through the Canadian Rockies providing access to Jasper National Park by way of Edmonton. It took many years of campaigning and pressure of a booming tourist trade to force completion of this road, whose complications of grade and watershed made it known as the Problem Highway.

There are advantages to lying below an altitude of 2,023 feet. Furthermore we have parks that are not only topographically but geographically available; we are in a position to offer more playground area to more of the United States than any other state. To substantiate this statement for yourself you have only to look at the map, to ponder our great extent of lake frontage and wilderness, and to recall that the center of population of the country lies in southeastern Illinois.

It is a great future. One of our photographs symbolizes the problem and the promise of our Parks system. It shows a scene soon to pass from actuality into the nostalgic files in the back of the mind: a traffic backlog waiting for the ferry at the Straits. A large percentage of these cars upon an average summer day is made up of natives and visitors both intent upon seeing the state and enjoying its park facilities, incidentally spending a lot of money within Michigan on their way. Imagination replaces this picture of frustration with the Straits Bridge of the future. Its lyrical flight over some of the most beautiful waters in the world will make more and more of the state available as playground. It is the responsibility of the citizens to make sure that that playground space, our State Parks system, keeps pace with the demand laid upon it.

We wish to thank the Michigan Department of Conservation for much of the material on which this article is based, including the charts used. Further information on the Parks may be obtained from the Department, located in the Mason Building, Lansing.

The man who makes no mistakes does not usually make anything.

Edward John Phelps, Speech, 24 January, 1899.

MICHIGAN RETAIL TRADE, 1948-1954*

By DICK A. LEABO**

All businesses change, and retailing is a dynamic business. The census provides the comprehensive facts on the business change, and herewith are summarized notable changes in Michigan.

Recent preliminary reports of the 1954 Census of Business make available new data by kind of business for that year. This article compares the changes in the structure of the retail industry in Michigan from 1948 to 1954. Analyzed in the light of personal income and population changes, such information is useful in appraising the State market pattern.

1948-1954 Sales Experience

In the six years from 1948 to 1954, sales of all retail establishments in Michigan rose by almost 39 percent. (See Table 1.) During this same period, retail sales in the United States increased by only 32 percent. This increase, of course, is measured before adjusting for changes in the retail price

level. Retail prices also have edged upward since 1948 but only by 8 percent. Therefore, the rise in the *physical* volume of retail sales in Michigan was approximately one-third more in 1954 than 1948, while for the United States retail sales were nearly one-fourth higher.

1948-1954 Store Size Increases

Average retail sales per establishment in Michigan were approximately 40 percent above the 1948 level. (See Table 2.) The increase for the nation was only 35 percent during this time interval. Even after allowing for an 8 percent price rise, the change is significant. For Michigan this represents a slightly higher increase than total retail sales for the state. (40 percent for average store sales compared with 39 percent for total sales.) However, for the United States the change was somewhat larger; that is, average store sales rose by 3 percent more than total sales. There appears to be a trend (the same thing is true since 1929) towards 'merchandising' by larger stores, partic-

*Data for this analysis were taken from the 1954 *Census of Business, Retail Trade*, Preliminary Report, Series PR-1-1, United States Summary and Series PR-1-22, Michigan and from the *Survey of Current Business*, August, 1956.

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TABLE 1.
PERCENTAGE CHANGE IN RETAIL TRADE, BY MAJOR GROUP,
MICHIGAN AND THE UNITED STATES, 1948 TO 1954

| Kind-of-Business Group | Establishments | | Sales | |
|--|----------------|-------|----------|-------|
| | Michigan | U. S. | Michigan | U. S. |
| Total | - 0.6 | - 2.5 | 38.8 | 31.5 |
| Food stores | 18.5 | -23.0 | 45.6 | 35.4 |
| Eating, drinking places | 0.4 | - 7.8 | 32.4 | 22.6 |
| General merchandise | 14.3 | 3.8 | 20.2 | 14.1 |
| Apparel, accessories stores | 3.6 | 4.2 | 14.9 | 13.9 |
| Furniture, home furnishings, appliance dealers | 13.7 | 9.0 | 53.7 | 29.9 |
| Automotive | - 4.2 | - 0.3 | 52.9 | 48.3 |
| Gasoline service stations | - 4.2 | - 3.5 | 63.6 | 66.3 |
| Lumber, building materials, hardware, farm equipment dealers | - 1.0 | 1.6 | 28.8 | 17.3 |
| Drug stores, proprietary stores | 2.7 | 0.4 | 34.9 | 30.7 |

Source: 1954 *Census of Business: Retail Trade*, Michigan, Series PR-1-22 and U. S. Summary, Series PR-1-1, January, 1956.

TABLE 2
SALES PER RETAIL ESTABLISHMENT BY KIND-OF-BUSINESS GROUP,
MICHIGAN AND U. S., 1948 AND 1954
(DOLLARS)

| Kind-of-Business Group | Sales Per Retail Establishment 1954 | | Sales Per Retail Establishment 1948 | | Percentage Increase in Sales Per Retail Establishment 1948 to 1954 | |
|---|--|--------|--|--------|--|-------|
| | Michigan | U. S. | Michigan | U. S. | Michigan | U. S. |
| Total | 119671 | 98594 | 85688 | 73105 | 39.7 | 34.9 |
| Food Stores | 132845 | 103224 | 74379 | 58696 | 78.6 | 75.9 |
| Eating, drinking places | 43764 | 40944 | 33190 | 30812 | 31.9 | 32.9 |
| General merchandise group | 388085 | 235539 | 368935 | 214312 | 5.2 | 9.9 |
| Apparel, accessories stores | 102031 | 92471 | 92028 | 84636 | 10.9 | 9.3 |
| Furniture, home furnishings, appliance dealers | 105848 | 93441 | 78262 | 78381 | 35.2 | 19.2 |
| Automotive group | 480252 | 347118 | 288322 | 233332 | 66.6 | 48.8 |
| Gasoline service stations | 69676 | 59318 | 42581 | 34439 | 63.6 | 72.2 |
| Lumber, building materials, hardware, farm equipment dealers | 135036 | 130068 | 103821 | 112673 | 30.1 | 15.4 |
| Drug stores, proprietary stores | 130853 | 93651 | 111109 | 71951 | 17.8 | 30.2 |
| Other retail stores | 65567 | 70040 | 60217 | 60598 | 8.9 | 15.6 |

Source: See Table 1.

ularly in certain types of business. Generally, during the past few years, the ever-increasing sales volume has been accomplished by fewer and larger stores. For example, the number of retail establishments in both the State and the Nation is lower in 1954 than in 1948 while sales volumes for both have continued to climb.

With only one exception (Other Retail Stores Group), average retail store sales in Michigan by kind-of-business group were above the United States average. (Note: this group contains such establishments as jewelry, liquor, feed, farm and garden supplies, book, gift, sporting goods, etc.) However, sales per retail establishment in Michigan by kind of business did not increase faster than the nation's average in all cases. In fact, the General Merchandise Group (largely department and variety stores), Gasoline Service Stations Group, Drug Stores Group, and the Other Retail Stores Group did not show as rapid a gain in average store sales in Michigan as did these same types of stores nationally. Nonetheless, average sales per store in all other groups in Michigan had more rapid advances than did the nation. For

example, average Michigan store sales by the group including lumber, hardware, and farm equipment dealers rose twice as fast as such sales in the nation. The furniture, home furnishings and appliance establishments also had increases in store sales rising considerably faster than the U. S. average. The largest increase (79 percent) in retail sales per establishment in Michigan took place in the Food Group (e.g., supermarkets, etc.). Likewise, this group nationally registered the largest gain, 76 percent.

Relative Importance by Kind-of-Business Group

In terms of the number of establishments, the food stores in 1954 continued to be the most important. (See Table 3.) More than one in five retail establishments in Michigan fall into this group. Nationally, the average is slightly higher. In 1948 this group accounted for more than one in four retail firms in both Michigan and the United States. Relatively, as measured by the number of stores, the food establishments are not as important in the Michigan economy as they are nation-

TABLE 3

NUMBER OF RETAIL ESTABLISHMENTS AS A PERCENT OF TOTAL,
BY KIND-OF-BUSINESS GROUP, MICHIGAN AND THE UNITED STATES
1948 AND 1954

| Kind-of-Business Group | Michigan | | United States | |
|---|----------|-------|---------------|-------|
| | 1954 | 1948 | 1954 | 1948 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Food stores | 21.4 | 26.1 | 22.3 | 28.3 |
| Eating, drinking places | 19.8 | 19.6 | 18.6 | 19.6 |
| General merchandise | 3.3 | 2.9 | 4.4 | 4.2 |
| Apparel, accessories stores | 6.9 | 6.6 | 7.0 | 6.5 |
| Furniture, home furnishings, appliance dealers | 5.6 | 4.9 | 5.3 | 4.8 |
| Automotive | 5.2 | 5.6 | 5.0 | 4.9 |
| Gasoline service stations | 12.0 | 12.5 | 10.6 | 10.7 |
| Lumber, building materials, hardware, farm equipment dealers | 7.2 | 7.2 | 5.8 | 5.6 |
| Drug stores, proprietary stores | 3.5 | 3.4 | 3.2 | 3.2 |

Source: See Table 1.

Note: Detail will not add to total because certain groups were omitted.

wide. However, the number of establishments is not the significant comparison. Food stores in Michigan, on the average, are considerably larger than are such firms generally in the nation. (See Table 2 which indicates average food store sales in Michigan in 1954 to have been 29 percent above the national average.) The next most numerous group in both the State and the Nation are the eating and drinking places, followed by the gasoline service stations.

The situation is shifted slightly in terms of relative importance as measured by sales volume. (See Table 4.)

While in both Michigan and the United States the food stores account for almost one in every four dollars of retail sales and are the most important group by this measure, too, the Automotive Group moves into second position by this comparison. The Automotive Group in Michigan accounts for one-fifth of the State's retail sales; nationally, the figure is less. In part, the importance of these two groups may be explained by increases in our living standards. Increased needs for additional transportation, higher income levels, and more fully equipped autos are reflected in the sales of the Auto-

TABLE 4

RETAIL SALES AS A PERCENT OF TOTAL,
BY KIND-OF-BUSINESS GROUP, MICHIGAN AND THE UNITED STATES
1948 AND 1954

| Kind-of-Business Group | Michigan | | United States | |
|--|----------|-------|---------------|-------|
| | 1954 | 1948 | 1954 | 1948 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Food stores | 23.8 | 22.7 | 23.3 | 22.8 |
| Eating, drinking places | 7.3 | 7.6 | 7.7 | 8.3 |
| General merchandise | 10.7 | 12.3 | 10.6 | 12.2 |
| Apparel, accessories stores | 5.9 | 7.1 | 6.5 | 7.5 |
| Furniture, home furnishings, appliance dealers | 4.9 | 4.4 | 5.1 | 5.1 |
| Automotive | 20.7 | 18.8 | 17.6 | 15.6 |
| Gasoline service stations | 7.0 | 5.9 | 6.4 | 5.0 |
| Lumber, building materials, hardware farm equipment dealers | 8.1 | 8.7 | 7.7 | 8.6 |
| Drug stores, proprietary stores | 3.9 | 4.0 | 3.1 | 3.1 |

Source: See Table 1.

Note: Detail will not add to total because certain groups were omitted.

motive Group. The trend toward more balanced diets, higher income levels resulting in a greater demand for higher cost foods, and nonfood item sales of supermarkets have helped hold the Food Stores Group in the number one position.

The General Merchandise Group, which contains the large department stores, records over 10 percent of all retail sales in both the State and the Nation. The eating and drinking places plunge from second to fifth place when measured in relative importance in terms of sales volume instead of by the number of establishments.

Relative Importance of Eight Metropolitan Areas¹ in the Michigan Retail Economy, 1954

In terms of all retail establishments, the State's eight metropolitan areas account for the majority of the economic activity in this industry. For example, these areas contain more than 6 out of every 10 retail firms; they do more than 70 percent of the retail sales; and hire almost 74 percent of the employees in this industry and pay them three-fourths of the State's wages and salaries in retailing.

The pattern of retail activity for these metropolitan areas in Michigan is similar when we consider the types of business. For example, 64 percent of the State's food stores doing more than 69 percent of the retail business are in these eight areas. Sixty-four percent of Michigan's eating and drinking places doing more than 73 percent of the sales are in these areas. Generally, the figures for the other groups are approximately the same except for the General Merchandise Group. While only 47 percent of such establishments are lo-

cated here, they account for 80 cents of every dollar of retail sales done by this group in Michigan.

As may be suspected, the Detroit metropolitan area (comprising Oakland, Macomb, and Wayne counties) is the dominant one in the State's retail picture. This area contains over 43 percent of the retail establishments which do more than one-half of Michigan's retail sales and pay 53 percent of the retail wages and salaries to over 55 percent of the State's retail employees. A similar picture is presented for each of the other retail groups.

Sales-Income Relationship, 1954

Nationally, Michigan ranked seventh on the basis of total retail store sales and sixth on basis of total personal income. When differences in population are considered, Michigan ranks fourteenth among the states in terms of per capita sales and ninth on the basis of per capita personal income. However, the State exceeds the U. S. Average for both retail sales and income on a per capita comparison.

Population of Michigan increased by 13 percent from 1948 to 1954. Per capita sales in Michigan in 1954 were 123 percent of the 1948 level, that is, 23 percent higher. Total personal income in Michigan was 48 percent higher in 1954 than in 1948. Per capita personal in Michigan in 1954 was 30 percent above the 1948 level and 113 percent of the United States 1954 average. Therefore, income and sales in Michigan on a per capita basis have been rising at a faster pace than the Nation as a whole.

Every one of the states that ranked ahead of Michigan is more heavily populated and a leading manufacturing state, too. They include New York, California, Illinois, Pennsylvania, and

¹Bay City, Detroit, Flint, Grand Rapids, Jackson, Kalamazoo, Lansing, and Saginaw.

Ohio. Texas ranked sixth nationally (just ahead of Michigan) in retail sales but seventh (following Michigan) in terms of personal income. It is interesting to note that while these populated states ranked near the top, every one but one has a sales-income ratio which is lower than the U. S. average and below a similar measure for Michigan. California, being the exception, just equaled Michigan's ratio of 57.6. (The U. S. figure for 1954 was 59.7 percent.) In part, these ratios below the U. S. average are explained by the composition of the state's income and industrial structure. That is, in areas where agriculture is an important industry, these states have represented in their retail sales figures expenditures which are really capital or business expenditures rather than personal consumption. For example, in the agricul-

tural states like Iowa, Nebraska, North Dakota, and South Dakota, expenditures for lumber, building materials, hardware and farm equipment comprise a large share of their total retail sales. When such figures are removed from all state totals their sales-income ratio is closer to the average.

Conclusion

In conclusion, it should be recognized that while retail trade sometimes is considered a tertiary industry, it still is a vital and important segment of the State's economic picture. For evidence we may look to the composition of Michigan's personal income. The combined trade industry (wholesale and retail) accounts for almost 12 percent of Michigan's total wages and salaries. Only the manufacturing industry contributes a larger portion of wages and salaries to the State's total income.

TABLE 5
PERCENT OF STATE TOTAL RETAIL SALES
BY KIND-OF-BUSINESS GROUP
EIGHT METROPOLITAN AREAS, 1954

| Kind-of-Business Group | Standard Metropolitan Area | | | | | | | |
|--|-----------------------------|--|------------------------------|----------------------------------|--------------------------------|------------------------------------|-------------------------------|--------------------------------|
| | Bay City (Bay county) | Detroit (Oakland, Macomb and Wayne Co.) | Flint (Genesee county) | Grand Rapids (Kent county) | Jackson (Jackson county) | Kalamazoo (Kalamazoo county) | Lansing (Ingham county) | Saginaw (Saginaw county) |
| Total | 1.3 | 51.4 | 5.2 | 4.8 | 1.6 | 2.0 | 3.1 | 2.3 |
| Food | 1.3 | 50.7 | 4.9 | 4.6 | 1.5 | 1.8 | 2.7 | 1.9 |
| Eating, drinking places | 1.3 | 55.5 | 4.5 | 3.8 | 1.7 | 1.8 | 2.6 | 2.1 |
| General merchandise | 1.2 | 38.9 | 4.0 | 6.0 | 1.6 | 1.6 | 3.9 | 2.3 |
| Apparel, accessories stores | 1.3 | 36.5 | 5.8 | 4.9 | 1.8 | 2.1 | 3.1 | 2.1 |
| Furniture, home furnishings, appliance dealers | 2.2 | 32.7 | 7.2 | 4.5 | 1.8 | 2.7 | 3.2 | 2.3 |
| Automotive | 1.1 | 32.0 | 5.2 | 4.2 | 1.5 | 2.0 | 3.2 | 2.7 |
| Gasoline service stations | 1.1 | 32.0 | 5.2 | 4.2 | 1.5 | 2.0 | 3.2 | 2.7 |
| Lumber, building materials, hardware, farm equipment dealers | 1.2 | 45.9 | 5.3 | 4.7 | 1.6 | 1.9 | 3.0 | 2.1 |
| Drug stores, proprietary stores | 1.4 | 36.1 | 5.8 | 5.1 | 1.7 | 2.6 | 3.3 | 2.6 |
| | 1.2 | 55.4 | 5.2 | 6.0 | 1.5 | 2.2 | 2.7 | 2.2 |
| Total, 8 metropolitan areas | | | | | | | | 71.7 |
| | | | | | | | | 69.4 |
| | | | | | | | | 73.3 |
| | | | | | | | | 78.7 |
| | | | | | | | | 74.8 |
| | | | | | | | | 72.5 |
| | | | | | | | | 65.7 |
| | | | | | | | | 58.6 |
| | | | | | | | | 76.4 |

Source: See Table 1.

CORRECTION, PLEASE

It is always a comfort, though a small one, to discover our own errors rather than to have our constant readers smell them out. So far, we are the only ones to notice the mistake in "Current Michigan Business Conditions" in *Business Topics* for November. On page 30 the total employment figures for September 15, 1956, are given as 259,000. Needless to say, total *unemployment* was intended. While blushing for our oversight, we have cast back into Michigan history for the time when total employment would actually have been approximately 259,000. That would have been in 1860, we figure, when the total population was 749,113. Anyone care to challenge our figures?

COAST TO COAST FOR \$1.25

You can travel by rail from the Atlantic to the Pacific for \$1.25. As the trip takes you outside the boundary of this state, perhaps we shouldn't give it this free publicity, but railroad fans should really know about it: The Panama Railroad runs this forty-mile trip four times a day, affording unparalleled glimpses of jungle, locks, lakes, and two oceans. Why stay home?

WHO WANTS WHAT FROM A PARK VACATION?

Elsewhere in this issue there appears an article on our Michigan State Parks. Statistical data assembled by Dr. Thomas Dahle of the MSU Department of Communication Skills forms an interesting supplement to the article itself. In a survey carried out for the Bureau of Business Research, Dr. Dahle personally interviewed almost 1,000 campers and picnickers while they were chopping wood or inflating air mattresses and were unable to escape. In addition some 4,000 campers voluntarily filled out questionnaires about their park use; these were sent to the Department of Conservation and then tabulated by the Bureau.

Copies of the brief report containing the results of Dr. Dahle's interviews are now available from the Bureau of Business Research. Please request *Michigan State Park Users' Survey, 1956*.

According to this report, it is predominantly residents of the state that make use of our parks. 84% of all visitors come from within Michigan, though this figure may be heightened by the fact that day camps were included in the survey, while such remote Upper Peninsula locations as Porcupine Mountains were not. However the percentage seems remarkably high. 41% of the users interviewed were from the Detroit metropolitan area, and 6% from the rest of Southeastern Michigan. The UP contributed *less than 1%* of the total. The results seem to indicate that the farther you live from cities the less you need parks, while the congestion of urban life lends charm to the great outdoors. It should be noted that since 84% of our park users are Michiganders, we are the ones penalized by an inadequate park system.

As for these inadequacies, the visitors were only too glad to name them. Insufficient sanitary provisions, under various headings, were the commonest complaint by far among overnight campers. Day campers wanted the obvious improvements that would serve their special needs: more tables and parking space, more recreational facilities, diving platforms, etc.

The types of recreation sought by both categories were not as varied as might be expected. Camping as such predominated, with swimming and fishing also favorite pursuits. The general lack of interest in hiking in this country (a lack the observer has suspected to be the case but has not been able to prove) is given statistical support by the survey. Very few users—about one in 10 — state that they are interested in this cheapest and best of sports. This fact may be partly due to the makeup of the parties. 4 to 5 is the predominant number, and these groups tend to be couples with children, in the great majority of cases. A brisk hike with a gaggle of children aged from 3 to 10 *cannot* be classed as sport. This statement needs no support from the science of statistics.

Both campers and picnickers agree that a park fee is a reasonable way to pay for facilities. 36% prefer a fee for the visit, 27% prefer a season sticker, and 23% have no preference. 7% don't want any fee at all, while 6% think the camping fee should be raised. How much should the park fee be? The most typical amount suggested was 50c per visit, or around \$2 for a season sticker.

Those who feel that the existence of State Parks takes money from the purveyors of services to the public should consider that the average amount spent by campers per day is well over \$9. This presumably benefits the community

at large. Then there is the 10% of those interviewed who spent a lordly \$16 per day and up, and would be an asset to have camping near your store or gas station.

The average visitor had stayed in more than two of our parks the year before, though a great many were out for their first season. Two out of three expected the current year's use to be twice as heavy as the year before. Such statements as these indicate that we citizens like our parks, despite their deficiencies, and hope to use them more and more. Queries on length of stay substantiate this: at almost every campsite where the question was asked, more people planned to stay a week or more than expected to stay just a day or two.

FROM ALL THE EARTH

When a Hungarian refugee student, perhaps the first to enroll on any American campus, was welcomed to Michigan State University, he was welcome indeed.

This incident was given appropriate publicity and was significant of a broader fact. We feel that the diversity of home locations from which M.S.U. students come also deserves attention throughout Michigan.

Current enrollment on the East Lansing campus finds that not only are all 83 Michigan counties represented, but every state except one (Nevada). Further afield, all the United States possessions except the Virgin Islands are represented. More notable, 62 foreign countries now have students at Michigan State. Such remote lands as Nigeria, Ceylon, Ethiopia and Paraguay are included.

Altogether 23 percent of the M.S.U. student body comes from other states or countries. And the proportion seems to be growing, for 27 percent of the *new* students are from outside Michigan.

As some other state universities likewise rejoice in the flocking of students from distant places, we are not trying to belabor this obvious compliment to our institution. We *do* want to stress two important results of this diversity of the student body:

1. In their support of the University, the people of Michigan are providing a real force to accomplish good throughout the world, in the persons of these young people; and
2. For our own Michigan students (now numbering nearly 15,000) a rich experience is offered in the opportunity to know and to understand fellow youth from all the globe.

BUSINESS RESEARCH PUBLICATIONS

The Bureau of Business Research was established in 1951 to assist the Michigan State University faculty in conducting economic and business research and to serve Michigan business with information and studies. The studies are usually published, and those currently available are listed below. Inquiries should be addressed to the Bureau's director. Where applicable, draw checks payable to Michigan State University.

RESEARCH REPORTS

12. *Taxation of Mobile Homes* (\$1.00)
13. *Wages, Hours, and Fringe Benefits in Member Stores of the Michigan Retail Hardware Association* (\$1.00)
14. *Michigan County Market Data* (Free)
15. *Michigan Statistical Abstract* (\$3.00)
A handy compilation of the most recent statistics on Michigan and its subdivisions. Ten major classifications of data, 179 pages, concerning the economic, social and physical aspects.
16. *Retail Sales in Detroit During December 1955 Newspaper Strike* (Free)
17. *Motels and Hotels from the Guests' Viewpoint (Grand Rapids Survey)* (\$2.00)
18. *Michigan State Park Users' Survey, 1956*, by Thomas Dahle (Free)



